AIRS Science Team Meeting

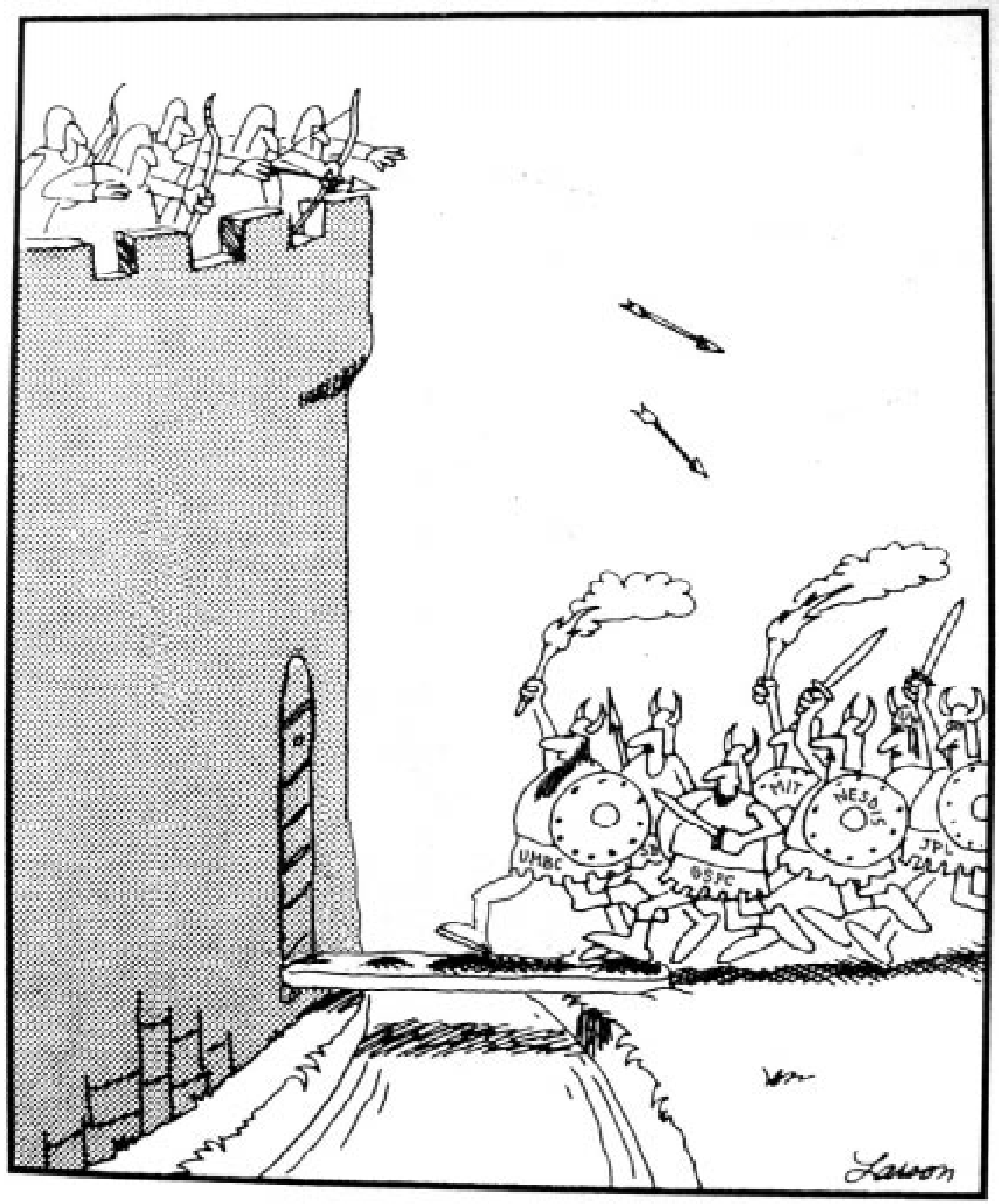
Pasadena, CA

19 June 2001

H. H. Aumann

Topics:

Status AIRS Hardware
Level 1B Status
Data Assimilation Workshops
Pre-launch IEEE papers
Validation Support AO Selection
Timeline from Launch



AIRS data, where are the AIRS data?

Status of AIRS

AIRS at TRW. Integration continuing
TVAC tests end of June 2001
Launch of EIS Aqua no sooner than 21 January 2002

AMSU/HSB power up: L + 2 weeks
AIRS power up: L + 1 month
AIRS VIS usable: L+1.5 months
AIRS IR radiometric calibration complete: L + 2 months
AIRS IR spectral calibration complete and stable: L + 3 months
detailed schedule in the AIRS On-orbit Calibration Plan

Until then use AIRS data simulated data
15 December 2000 NCEP analysis based level 1b data on
alpha.jpl.nasa.gov/pub/public.

Level 1b Status (PGE Version 2.1.5)

- IR
  - Radiometric
  - Spectral
  - Spatial
- VIS
- microwave

Level 1b Status

IR

Radiometric

- Implemented and tested
- New Lunar filter algorithm
- Improved quality flags (Cij flag)

Spectral

Spatial

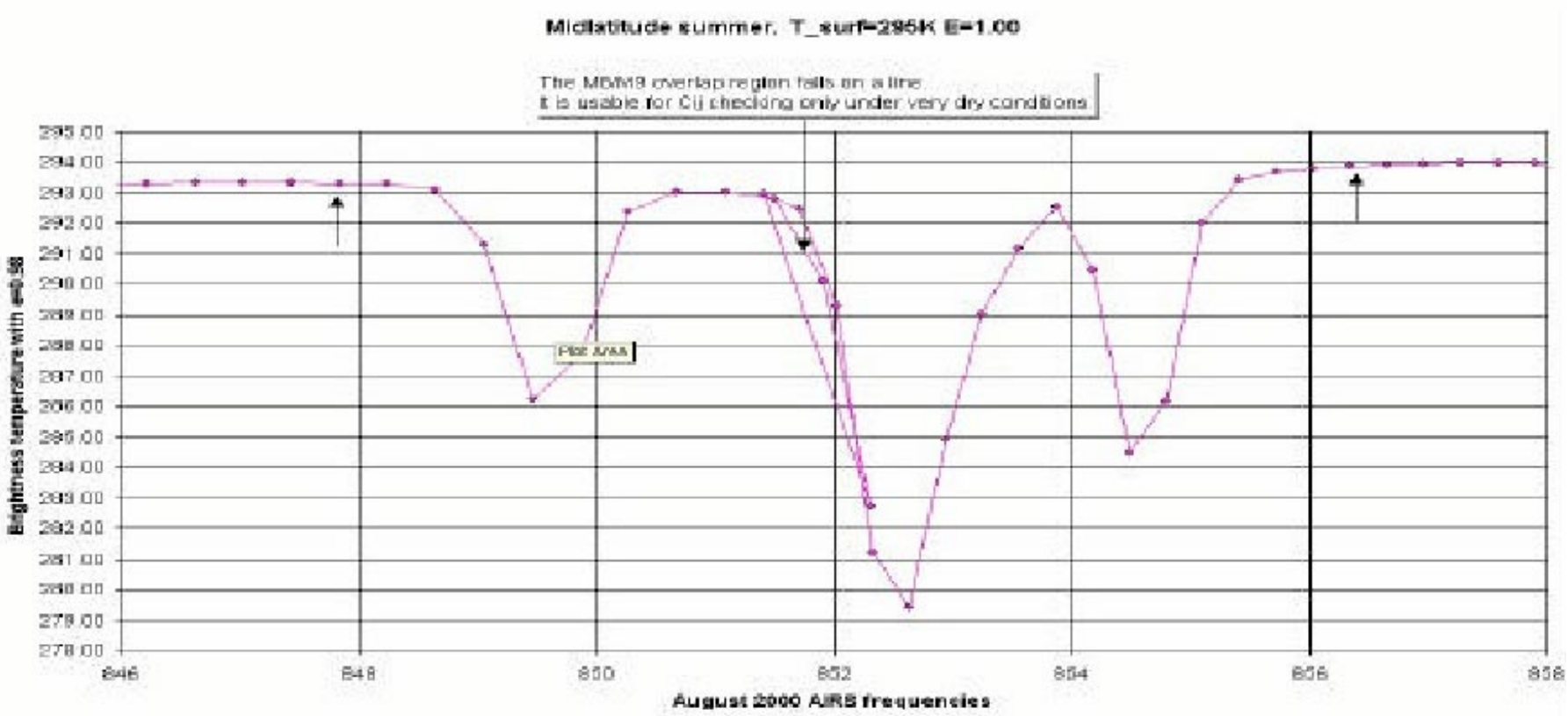


Figure 2. Overlap region for arrays M8/M9 shown for a night time tropical temperature/moisture profile.

Level 1b Status

IR

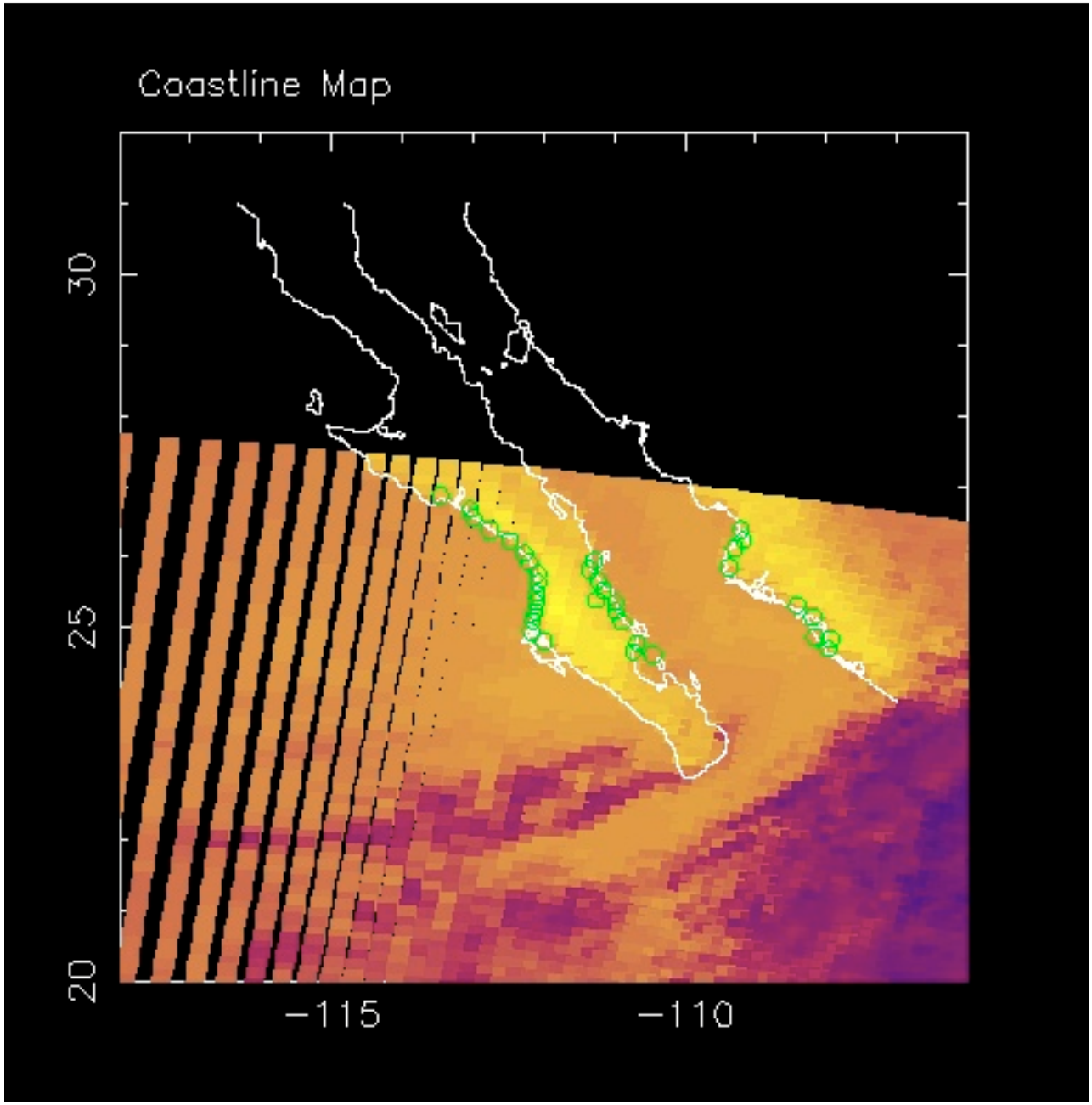
Radiometric

Spectral

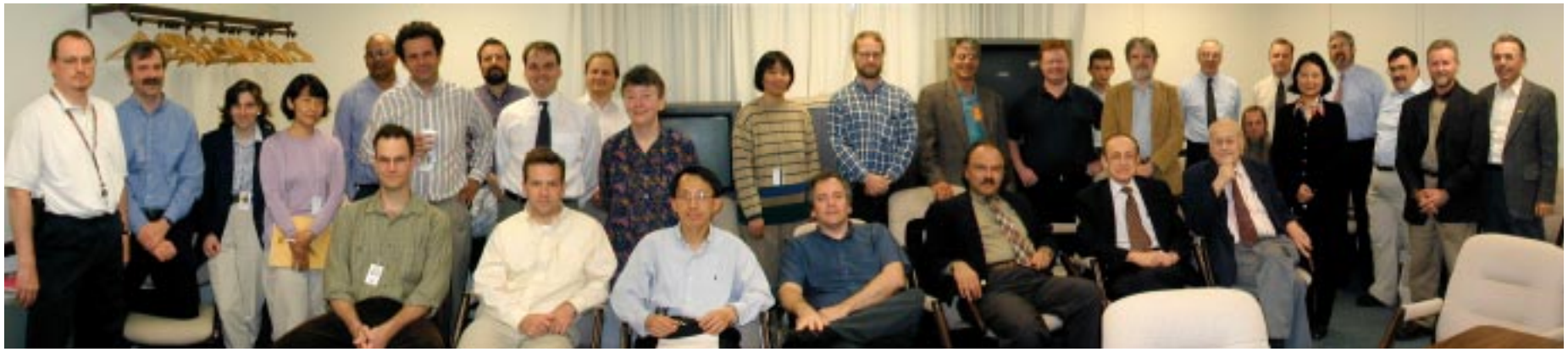
- Implemented (ATBD)
- Tested in testbed, not PGE
  - spectral contrast used as cloud discriminator
  - 0.5% of DeltaNu accuracy per granule

Spatial

- Technically not part of Level 1b, but needed for AIRS/AMSU/HSB software coalignment
- Uses coastline crossings
- MODIS 11 micron 1km data degraded to AIRS 15 km data
  - used for software development
- Accuracy 3 km rms using single crossing
- Error dominated by cloud contamination and scene systematics


Coastline Map
30
25
20
−115
−110

AIRS Data Assimilation Workshops
6 December 2000
16 May 2001
16 September 2001 (scheduled)



16 May 2001 Assimilation Meeting

IEEE pre-launch EOS AQUA special issue papers

15 Abstracts for AIRS/AMSU/HSB papers received

GSFC Project Office proposal sent to IEEE editor

- Concern about too many papers
- Papers to be presented at then October AIRS team meeting
- Papers due at IEEE November 2001 for formal review
- Expect August 2002 publication

- Most aspects of Level 1b and 2 covered except
  - microwave retrieval (refer to previous paper)
  - first IR retrieval (regression)
  - clear identification
  - 2 papers not level 2 related (Staelin and Smith)

"AIRS/AMSU/HSB on the Aqua Mission. Design, Science Objectives and Data Products", Aumann, Chahine, Gautier, Goldberg, Kalnay, McMillin, Reverconb, Rosenkranz, Smith, Staelin, Strow and Susskind

" AIRS Prelaunch Radiometric Characterization and Inflight calibration",
Thomas S. Pagano, Hartmut H. Aumann[a], Ken Overoye and Denise Hagan

"AIRS Validation from Drifting Buoy Observations and Real-time, Global, Sea Surface Temperature Analysis",
Denise Hagan, Hartmut Aumann, Jean Thiebaux

"AIRS Prelaunch Spectral Characterization and In-orbit Calibration",
L. Strow, S. Hannon, M. Weiler, S. Gaiser and H. Aumann

"AIRS Prelaunch Spatial Characterization and In-flight Calibration",
D. Gregorich, T. Pagano, H. Aumann and Steve Broberg

"AIRS Radiative Transfer Algorithm Development and Validation",
L. Strow, S. Hannon, S. Desouza-Machado, D. Tobin, H. Motteler

"AMSU/HSB instruments, prelaunch calibration and level 1b software",
Lambrigtsen et al.

"Co-Alignment and Synchronization of the AIRS Instrument Suite",
Bjorn H. Lambrigtsen, Sung-Yung Lee, Rudolf A. Schindler

"Airs Validation and Tuning",
Larry McMillin, Mitch Goldberg, Sisong Zhou, HanJung Ding

"Retrieval of atmospheric and surface parameters from AIRS/AMSU/HSB data under cloudy conditions" ,
J. Susskind, C. Barnet and J. Blaisdell

"AIRS Near Real-Time Products in Support of Global Data Assimilation for Medium Range Weather Forecasting",
Mitchell D. Goldberg[1], Larry M. McMillin[1], Walter Wolf[2], Lihang Zhou[2], Yanni Qu[3], Murty Divakarla[3]

"AIRS Visible/Near-infrared Instrument and its applications",
Gautier, C. S. Yang and M. Hofstadter

"Validation of AIRS/AMSU/HSB precipitation estimates",
Frederick W. Chen and David H. Staelin

"AIRS Cloud-clearing Using Multi-spectral MODIS Imagery",
W.L. Smith, D. K. Zhou, and H.L. Huang

"AIRS Science Processing System (ASPS): A Description of Architecture and Capabilities",
Navid Dehghani, Evan M. Manning, and Quentin Sun

Validation AO

Selection 5 June 2001 (Task Leader/Organization/Title)

Atlas, Robert M, Goddard Space Flight Center
Geophysical Validation Activities in Support of AIRS

Barnes, John E, NOAA/CMDL
Validation of Humidity, Temperature and Ozone of the AIRS Instrument
Over Mauna Loa Observatory, Hawaii

McMillan, Wallace, Univ of Maryland Baltimore County
BBAERI AIRS Ocean Validation Experiment: BAOVE

Minnett, Peter J, University of Miami
Trans-Oceanic Measurements for EOS Aqua Validation

Newchurch, Michael J, Univ of Alabama Huntsville
Validating AIRS Ozone Observations

Schmidlin, Francis J, GSFC/Wallops Flight Facility
Temperature, Water Vapor, Ozone Dedicated Radiosonde Validation Measurements

Voemel, Holger, University of Colorado Boulder
Balloon Borne Soundings for Validation of Upper Tropospheric Humidity and Temperature

Walden, Von P, University of Idaho
Validation of the Atmospheric Infrared Sounder (AIRS) Over the Antarctic Plateau

Whiteman, David N, Goddard Space Flight Center0
Water Vapor and Cloud Detection Validation for Aqua Using Raman Lidars and AERI

Yoe, James G, NOAA/NESDIS
Validation of AIRS Column-Integrated Water Vapor Using Surface-Based GPS Sensors

No funding until FY2002

Three year effort not coordinated with AIRS Validation Plan

Timeline relative to the Launch (L) of EOS AQUA

L+2 weeks	microwave power up
L+4 weeks	microwave data usable
	AIRS power-up
L+6 weeks	AIRS VIS usable data
L+2 months	AIRS Spectrometer Calibration starts
L+3 months	AIRS stable, calibration stable,
	RTA at (3) pre-launch frequency sets
	no bias estimates and correction
	Clear FOV filter validated
	Press conference
	Intensive Val. Campaign starts (Dedicated RAOB launches etc.)
L+4 months	Recalculated RTA at in-orbit frequency set
	Start bias evaluation
L+6 months	Initial bias and noise covariance evaluated.
	Level 2 retrievals start
L+7 months	First Level 1b post-launch upgrade delivery to DAAC
	Intensive Val. Campaign ends
L+10 months	RTA with new physics tested and delivered
	Refined bias evaluation starts
L+12 months	First post-launch Level 2 upgrade delivery to DAAC
	Start ATBD updates
	Start Research Product Development
L+18 months	Post launch AQUA Special issue
	L+2 through L+5 year re-proposal due

Action Items from the 21 February 2001 Meeting

Tobin: Ground track prediction program
Fetzer: Global “ARM/CART type” truth evaluation
Granger: Post proposed level 3 products
S.Y. Lee: Requirements for pre-L2 PGE
Barnet: Clip unphysical solutions
Barnet: Level 2 problem
Aumann: Software release policy
Fishbein: Stand-alone cloud-free indicator
Dehghani: Scripts of data access at the TDS